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AUTHOR Freeman, Andrew R.
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ABSTRACT

In outlining futures techniques that can be used by school administrators for creative planning, this paper discusses several small group exercises. These include the "Six by Six" technique, in which a large group breaks up into six small groups for six minute discussions; the "PNT Approach," in which the length of each discussion period increases as positions become solidified; and scenario development, in which possible future situations are developed and analyzed. When discussing scenario development, the author describes in detail the Cross Impact Matrix Analysis on Transparencies (CIMAT) technique. The author then presents the use of case studies for problem solving, a technique he considers useful because the problems presented seem real and relevant and may require complex problem-solving approaches. He also describes role playing, in which participants act through a problem situation; the Delphi technique, in which questionnaires are used to order priorities or to get a consensus of opinion about when future events will occur; and futures games, for which he recommends that group leaders use those on the market rather than develop their own. Two techniques developed by the author, "Brainstorming-on-Microfiche," and "Brainstorming-in-Football Stadiums," are briefly mentioned. (Author/JM)

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"USES OF FUTURE STUDIES TECHNIQUES BY EDUCATIONAL ADMINISTRATORS"

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By Andrew R. Freeman

Head, Research and Planning Unit

Kuring-gai College of Advanced Education

PO Box 222,

Lindfield, NSW, Australia, 2070

Telephone: (02) 467 9200

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ABSTRACT

"Uses of future studies techniques by educational administrators", by Andrew Freeman, Head, Research and Planning Unit, Kuring-gai College of Advanced Education, PO Box 222, Lindfield, NSW, 2070.

In this paper various uses for future studies techniques in higher education administration are considered. Specifically, consideration is given to the following techniques:

- small group exercises,
- role plays,
- case studies,
- scenario development techniques,
- games, and
- delphi.

A number of new futures techniques are introduced in this paper, which would be used by educational administrators. Specifically, consideration is given to how the following techniques could be used by educational administrators:

- CIMAT (Cross Impact Matrix Analysis on Transparancies),
- BOM (Brainstorming on Microfiche)

"USES OF FUTURE STUDIES TECHNIQUES BY EDUCATIONAL ADMINISTRATORS"

By Andrew R. Freeman

Educational administrators are faced by an increasingly rapid rate of change in both their own institutions and society at large. There is increasing need for them to have skills in creative rather than purely projective planning. This paper deals with a number of creative (that is, preferable as compared with probable) planning techniques.

The material in this paper is based on information developed for the Third International Community Educational Conference, published in the book "1981 Plus - Community, Participation and Learning", Book 4: What? (ISBN 0724182254) pages 179-187)

1. Small Group Exercises

Small group exercises can be valuable in generating ideas. In the Philips 6 by 6 technique (UNESCO, 1977, page 115) participants initially have a general discussion on a problem area of concern. In the area of education administration this might, for example, deal with the issue of educational funding restraints. This initial discussion would generally involve the breaking up of the larger problem area into specific issues to be considered. For example, in the area of educational funding restraint issues might include:

- the philosophy of the liberal and labour parties to educational funding;
- reactive and pro-active responses to educational funding cut-backs;
- new approaches for revenue generation in tertiary educational institutions; and
- inexpensive approaches to teaching in tertiary education institutions.

Then participants break up into six small groups for six minutes to discuss one specific issue. A spokesman is appointed by each group. The spokesman presents the group's conclusions at a spokesman's table after the six minute discussion. A major advantage of this approach is participants are generally more willing go present their view-points than in a seminar situation (this is particularly the case if the workshop has more than twenty people in it). Also, with this approach, there tends to be less chance for individuals or view-points to dominate the discussion. As with all small group exercises the co-ordinator plays the role of an organiser and facilitator, rather than that of a group leader((a) Freeman 1979, page 76). This is to avoid domination of the groups by the co-ordinator's viewpoint. It is very difficult for this not to occur if the co-ordinator takes an active role in the exercise as a participant.

After the presentation of group viewpoints, the groups are re-formed, generally with different participants and spokesmen in each group, to consider the next issue. Naturally, the comments of the groups

are recorded for future reference. However, this recording process would generally involve a recording of the comments in a point form rather than in detail. If the comments are recorded in detail at this stage it tends to reduce the spontaneity of the discussion.

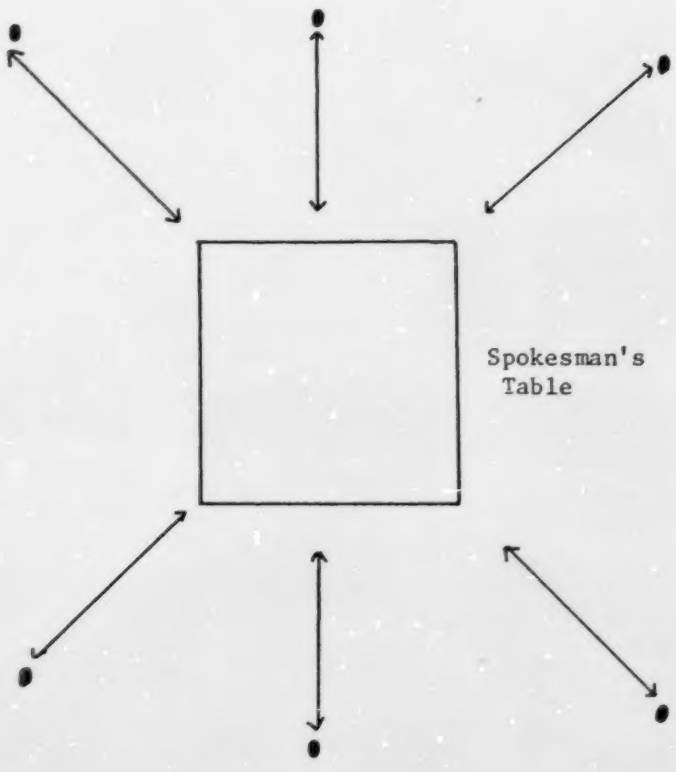
The choosing of a new spokesman is consistent with the aim of reducing the chance for individuals to dominate the discussion. Also it has been found that re-forming of groups tends to reduce the investment individuals have in particular positions (that is, they leave behind the statements they have made in the last exercise).

A variation on the Phillips 6 by 6 approach is the PNT approach (UNESCO, 1977, p.15) where:

P = the number of sub-groups
N = the number of people in each sub-group, and
T = the time taken for the exercise

It has been found that if T is greater than 30 minutes, there tends to be greater internal cohesion within groups. Also, that as T increases there tends to be a greater "distancing" between groups. This suggests that initially T should be kept short (to maximise diversity within groups) and that as the possible positions open to people become clear, T should increase, and that people should be given more choice as to which group they participate in.

This approach can be represented in the following way:



In the PNT approach, an organiser (co-ordinator), convergent analyst and divergent analyst can be appointed.

Their jobs are (respectively) :

1. To organise the resources to be used in the exercise so that it will "flow" efficiently;

2. The convergent analyst will assist groups in integrating factual material into their discussions;

3. The divergent analyst will encourage groups to use a variety of "unconventional" approaches (such as "brainstorming") in their problem solving sessions. The role of convergent analyst and divergent analyst are similar to those played by synergists in the conference. Perhaps synergists could be appointed to carry out one of these specific roles? The only disadvantage would be that the synergists would move from group to group, rather than staying in one place for the whole session.

Another small group exercise approach is termed a "round table approach". In this approach representatives of all the groups involved in a problem area are brought together. Potentially it can be a very useful approach for clarifying the sorts of issues which would be considered when using a PNT approach. However, it requires a fair bit of time, and a strong chairman for this approach to be effective. Also, it is essential for all groups represented to get a reasonable amount of time to put their viewpoint. In the area of technological change and educational administration, a round table exercise might involve:

- a number of educational administrators;
- union representatives;
- representatives of the sciences (eg. a representative from ANZAAS
- a Government representative;
- students
- a representative of the relevant academic faculties; and
- representatives of groups assisting people to cope with change (for example, Australian Frontier).

A danger with this approach is that the issue can be so "large" that the group will not be able to come to grips with it. To avoid this problem the issue can be made fairly specific (for example, how will word processing technology affect educational administrators in tertiary education institutions in the 1980's?) and the participants selected to attend carefully chosen so that they would be expected to have something specific to contribute. I would suggest that seven is about the ideal number attending this sort of exercise.

This sort of exercise could be implemented via a telephone link-up (telecom can link-up up to nine telephones for a small fee.) Another possibility would be to use a conference telephone. A conference telephone is a telephone with a loud speaker and microphone attachment. This would be particularly useful if groups of administrators are to be able to "listen in" to the round table discussion.

I see the main advantages in the use of small group exercises to be:

1. that they require little hardware;
2. they facilitate participation; and
3 if a variety of participants are incorporated, they tend to broaden the horizons of those involved.

Scenario Development

Scenarios are "pictures" of possible future situations. Naturally these pictures will be different depending on the assumptions made ((b) Freeman, 1978, page 10). It has been found that there is nothing which catches the imagination of participants quite as well as one of these stories related to the future (Wilson, 1978, page 225).

Scenario development involves groups in using a variety of techniques to:

1. develop possible future situations;
2. analyse these future situations - for both positive and negative aspects;
3. develop pictures of possible and preferable futures, and
4. develop plans of how they can assist in creating preferable futures.

Scenario development involves participants in divergent thinking (Enzer, 1977, page 25). Scenario development also involves participants in using synthesis skills (in that they are required to bring together possible trends and events, evaluate the relationships between them, and consider how they can assist in bringing to pass the desirable scenarios developed.)

In developing scenarios it is essential that all the trends and events of relevance be considered. In the past many forecasts have not considered the interaction between trends (Stever and Gordon, 1978, page 301). By using a cross impact matrix, this problem can be at least partly overcome. Cross-impact matrix analysis assists participants in identifying "...obscure but important complex changes likely to follow from the integration of clearly identifiable individual change possibilities" (Enzer, 1977, page 29).

Formal cross-impact analyses requires a fairly high level of mathematical sophisitication. In this paper I will present a simplified version which does not use Monte Carlo analysis or incorporate grobabilities in a formal way. This approach has three stages:

1. list all the possible and established trends and events which may conceivably affect a problem area;
2. develop a matrix incorporating all of these trends and events, and
3. allocate relationships to the co-ordinate in the matrix ((a) Freeman, 1979, page 77).

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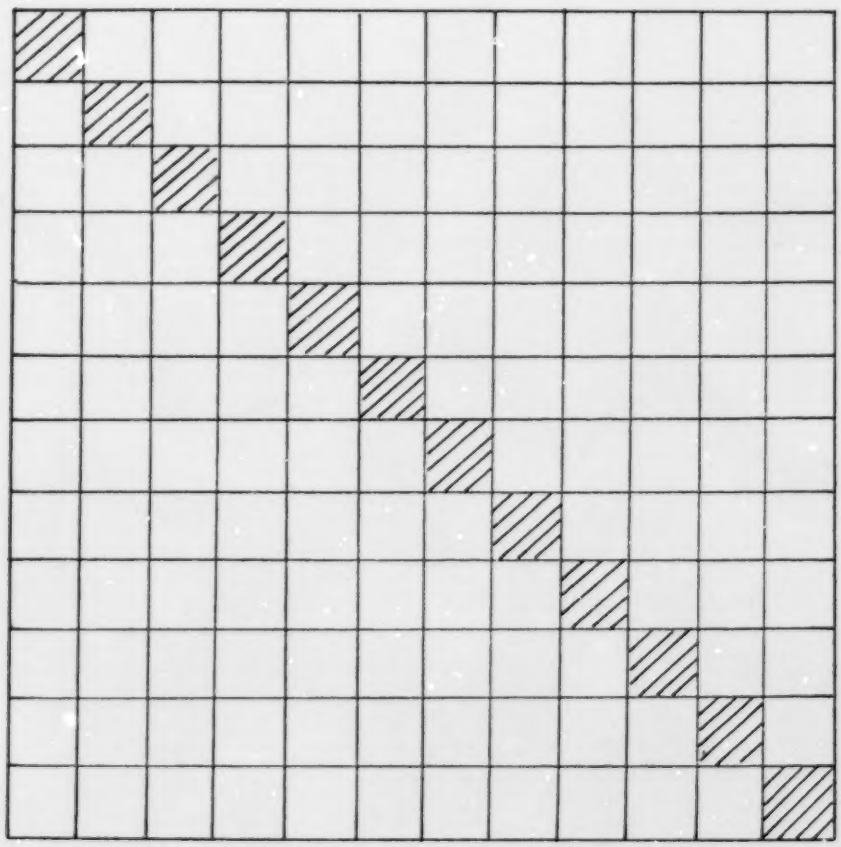
The scenarios developed will incorporate the insights gained during these three steps.

A simplified example, related to educational administration might incorporate seven trends and five possible events.



A cross-impact matrix.

Trends

- an increased proportion of the population in the 65+ age group,
- increased leisure time,
- an increased emphasis on lifelong education,
- a greater use of computer technology in educational planning and implementation,
- a declining rate of population growth,
- an increased emphasis by the federal government on vocational training,
- a greater accountability of education institutions to the community which they serve.

Events

- Futures Groups would be set up at the world, federal, state and local levels,
- 90 percent of Colleges of Advanced Education would become community colleges,
- 90 percent of educational institutions would have access to an international computerised information search system,
- there would be greater employment of outside consultants in educational institutions,
- 90 percent of home incorporating a computer terminal.

"Each 'box' in the matrix is allocated a number which indicates the strength of the relationship between the co-ordinates.

0 = no relationahip
+ or - ½ = a small relationship
+ or - 1 = a medium relationship
+ or - 2 = a strong relationship
+ or - 3 = a very strong relationship
+ indicates a positive relationship
- indicates a negative relationship

It requires in depth analysis to fill in each box". ((a) Freeman, 1979, page 77). In order to fill in each box participants are required to anticipate "cross impacts" (Spitzer, 1977, page 4).

For example, participants might decide that there is a strong positive relationship between an Event and Trend. In this case they would put +2 in the appropriate box. The direction of causation is from the components on the row side, to the components on the column side.

Once the matrix has been completely filled in, participants will have many ideas to incorporate in scenarios. The fact that so many "synthetic histories" can be generated from a limited number of trends and potential events, helps participants get a feel for the concept of the future being in the action domain - it is something which we can influence (this compares with the past which is in the knowledge domain) (Ziegler et. al.,1977, page 5).

The allocation of relationships to co-ordinates, requires participants to examine in a rigorous way, assumptions which they hold about the relationships between possible events and trends. This is of real benefit even if scenarios are not developed.

The major benefit I see in the production of scenarios is that it requires participants to look beyond the overwhelming present. No one would argue that educational administrators should not spend a significant amount of time on present-related activities. The problem is that if this energy is not clearly expended on activities related to long term objectives, the results achieved may be of marginal usefulness - this is particularly so when one considers how scarce time is. Also, scenario development brings home to participants the implications of possible combinations of events and trends, and gives them a "feel" for crucial decision points.

Naturally, before filling in the boxes participants would need to have a good understanding of the possible events and trends under consideration, and their inter-relationships. This can be best achieved using expert resource people, and by giving participants relevant references to read before the session takes place.

If this does not occur, scenarios developed may not take into account all the relevant economic, social and political constraints involved in the problem area. In fact, in such a situation scenarios developed "... may be so divorced from reality as not only to be useless but also misleading and therefore dangerous" (Toffler, page 162).

As with all future studies techniques scenario development is not an end in itself. Future studies techniques should be used in assisting participants in influencing the future in a desirable way; not just as a "forecasting" technique.

I have developed a new approach to cross-impact matrix analysis which I term CIMAT (Cross-Impact Matrix Analysis on Transparencies). This involves each participant in a group having an overhead transparency with a standard cross-impact matrix on it. Each participant uses a different coloured pen to insert his or her feelings about inter-relationships. The relationships are represented using arrows rather than numbers. When the transparencies are placed on top of each other it becomes obvious where the areas of agreement are and where the areas of disagreement are. A number of rounds are held. Participants can change their "relationships" between rounds (pens with water soluble ink are used.)

Case Studies

Case Studies involve the presentation of a problem in a "story" form to participants to consider. The major advantages of this approach are:

1. It is realistic in that much "irrelevant" information is included in the case study.
2. Case studies are open-ended - there are no "right" or "wrong" answers.
3. Case studies can be developed around problem areas participants are likely to face in the future.

Case studies can be particularly valuable in educational instutions. Too often when teaching principles, educators:

1. completely develop the problem solving approaches to be used; and
2. provide all the date needed to solve the problem, and no more. ((c) Freeman, 1979, page 34)

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This is clearly inconsistent with real life problem solving situations where neither the problem solving approach is provided or date grouped for ease of analysis. A crucial skill for educational administrators in a world increasingly subject to "information overload", is the ability to distinguish between the relevant and irrelevant in problem solving situations. The use of case studies facilitates the teaching of this skill.

A motivational aspect of the use of case studies is that, if they are well designed, participants can clearly see the relationship between the case study and problems they are currently facing, or can expect to face in the future.

An example of a case study in the business areas might involve the consideration of the viability of a potential new product. Information on marketing, production, finance, and personnel could be included ((d) Freeman, 1978, page CE.7.)

In the educational areas case studies could be developed around the following sorts of issues:

- cuts in funding,
- involvment of the community in schools,
- the mainstreaming of handicapped children,
- participative management of schools,
- ethnic conflict in schools,
- accountability of schools to community,
- computers in schools,
- mastery learning - problems and benefits, and
- teacher education for literacy - changes needed in teacher training.

A useful innovation is to have participants contribute case studies (naturally, suitable ground rules for discussion should be set down so that there is no embarrassment to those who contribute case studies from their own experience).

Role Plays

Role plays involve participants acting through a problem situation. They provide a "safe" learning environment in which to experiment with different strategies and behavioral styles. The environment is safe because participants do not need to live with the consequences of their actions during the role play. Also, as participants are in role, any criticisms of their actions will generally be taken in a less personal way then if they were playing themselves.

At the beginning of the role play each participant will be given information on:

1. the problem situation;
2. his or her role and background;
3. the role and background of other partipants.

This information will be presented in the most realistic way possible - films, tapes and statistical information will often be used to "set the scene".

Another approach to enrolling is far more "open-ended". This involves:

1. identification of the problem situation, and the allocation of roles;
2. allowing the role play to evolve - participants choose their own name;
3. let participants generate their own background information;
4. talking together, in role, in small groups; and
5. bringing small groups together for role play.

(Crawley, 1979, page 38)

In role plays there are five stages:

1. the presentation of an incident or situation involving conflict;
2. group identification of problem areas;
3. volunteer role taking;
4. role playing - the actions and dialogue of participants will reflect the role given to each; and
5. general discussion

(Conoley et. al.,1975, page 2)

For a role play to "work", it is essential that the co-ordinator create an environment of trust, and that he have credibility with the participants. Without this it is unlikely that the participants will "open up" (Conoley et. al., 1975, page 3).

The initial role plays should involve situations which the participants are familiar with. For example, situations arising from budget cutbacks might be role played.

The beginning of a role play involves the introduction of the participants (by the co-ordinator) to an observer. Background information will be given. If any blocks occur, the participant should be firmly reminded who he or she is and told to continue in role. The role play can be suspended for periods of time for comments or coaching. It should be made clear that it is the co-ordinator's responsibility to terminate the role play (Crawley, 1979, page 38).

It is essential that participants be de-roled after a role play. This involves participants explaining how they felt during the role play (this is termed the "soliloquy method") (Conoley, et. al., 1975, page 9).

Participants' feelings are then discussed. Also, it should be emphasised to participants that they are no longer in role - this is critical where the play has lasted for a long period of time or has been traumatic for participants. This is because participants can identify very strongly with a role by the end of a role play and may fail to "give up" the role for hours after the play has ended if they are not properly "de-roled".

Some of the following sorts of questions can be asked during "de-roling":

1. How did you experience the role play?
2. What was the most important transaction for you during the role play?
3. How are you now feeling as yourself?

(Crawley, 1979, page 40)

The role play can be seen as the stimulus, and "de-roling" as the opportunity to explore one's response to that stimulus. It is a good opportunity for feedback. "De-roling", if done properly will often take longer than the role play itself (Crawley, 1979, page 39).

Role playing is a future studies technique when it involves participants in playing roles which they may need to take, or interact with, in the future.

Delphi

In Delphi analysis, experts are consulted in order to get a consensus of their opinions.

The consensus may relate to:

1. The time it will take for a particular event or series of events to occur; or
2. The ordering of priorities.

There are three key elements in a Delphi study:

1. structured information flow;
2. feedback to participants; and
3. anonymity of participants.

(Linstone, 1978, page 274).

To avoid the problems of a committee approach (these being, face-to-face confrontation, unwillingness to abandon publicly stated view-points and the time consuming nature of a committee approach) the experts are sent a questionnaire asking them to order priorities, or to predict how long it will take before specific events will occur.

Returned questionnaires are analysed and results of the analysis are returned to participants together with a blank questionnaire. Participants then respond again. Those with extreme viewpoints in the first round are invited to enclose justifications with their questionnaires.

In the third round this process is repeated, except as well as sending the results of analysis and a blank questionnaire to participants, justifications are also sent.

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It has also been found that as the rounds proceed there tends to be a narrowing of the spread of opinion. Also "...delphi works best when it polls the experts who are actually attempting to achieve a given result." (Kahn, et.al., page 187). This is because in this sort of situation a delphi can be an exercise in "self-fulfilling prophecy." (Kahn, et.al., page 188).

There are a number of possible variations to this approach to delphi:

1. It is possible for a delphi approach to be used in which a key organisation provides a ranking of such things as strategies, rights, and responsibilities, or priorities and the public at large reacts to it by rearranging the listing according to their own preferences.

2. Participants can be asked the likely time for an event to occur and also the desirable time.

3. Delphi can be carried out via computer terminals (Linstone, 1978, page 275).

4. Stratified samples of experts can be used in order to get more heterogeneous viewpoints.

5. In exercises which involve the ranking of objectives, participant "energisation" has sometimes been a problem. I feel that this could be because of the amount of energy required to rank objectives when only a small percentage of the objectives may be considered important by the specific participant. To overcome this problem I feel that "points" could be allocated to participants - say 100 each - which they would then allocate to proposed objectives as they see fit.

6. Instead of giving a specified time till an event will occur, experts can be asked to set "bounds" - giving earliest, latest, and mean times for an event to occur.

It has been found that the smallest group which a delphi should be run with is around seven (Linstone, 1978, page 296). This means it would be quite feasible for conference organisers to carry out a delphi before a conference, of the people expecting to attend. This would be particularly useful where the participants are widely dispersed.

In the United States the delphi technique has been used extensively in government, colleges, business and in public schools (Andes et.al., 1977, page 2). An example of a delphi done in the area of education in the United States occurred in 1970. Superintendents and chief state school officers were polled in eighty-two school districts. "Findings of the follow-up study show that all the organizational changes forecast to occur by 1974 have occurred and that no changes forecast to occur after 1978 have occurred." (Andes, 1977, Abstract).

One administrator who had organised a delphi in order to rank college objectives considered the exercise highly beneficial as a "consensus creating device". He also felt that the technique has potential as a predictive device. One problem he found in using this approach is that "the name tends to put people off". He also had some difficulty in "energising" respondents (this is why he did not ask respondents with extreme viewpoints to enclose justifications in the second round.)

Future Games

Games have three main features:

1. Real life is simulated;
2. The time variable is accelerated; and
3. Participants do not need to live with the consequences of their decisions.

(Roberts, 1976, page 3).

A game has four stages:

1. The introduction of the game;
2. The assigning of roles;
3. Playing the game; and
4. Discussion.

In some ways the games approach is similar to the role play approach. The basic differences are:

1. Games are innately competitive;
2. In games there are rules which will constrict behavior within clearly defined bounds;
3. Risk is innate in all game situations; and
4. Chance - participants have less than complete control over the direction of the game.

(Dunathan, 1978, page 14).

Before World War II gaming was restricted to the military. In "war games" roles are assigned and resources allocated. Chance factors (such as weather, transport failures and surprise attack) are integrated into these games.

The basic advantages of this approach are that time is condensed and the cost factor is minimised (McLean, 1978, page 12).

Since then games have been developed in almost every imiginable field of the social sciences. For example:

- "At-issue game" examines the implications of a proposed new highway.
- "Impasse game" was used in Ghana by a group concerned with the development of a new market in Accra.
- "Metro-apex game" is used a pollution control training aid.
- "MEX Game" was developed by UNESCO: it is a game designed to be used by Third World nations. It is concerned with human settlement planning issues.
- "The Conceptual Mapping Game" employed by a research and development firm in Southern California to explore geothermal energy implications and alternatives as part of the national energy picture. (Duke, 1978, page 354).

Because of the cost (both in terms of time and money) involved in developing games, co-ordinators would generally use games already on the market.

Games are valuable in that they assist participants in gaining skills of a heuristic nature - that is "... a flexible set of highly abstract conceptual tools that will let the participant view new and emerging situations, having no precedent, in a way that permits comprehension." (Duke, 1978, page 366).

BOM (Brainstorming-on-Microfiche)

BOM is the technique which I have formulated which is an inexpensive alternative to computer conferencing which educational administrators could use to consider potential futures. It involves contributions being placed on microfiche together with multiple indexes at the front of the fiche. A number of rounds are held in order for interaction to occur. More details on this technique see "Brainstorming-on-Microfiche: An alternative to computer conferencing". Educational Technology, in press (expected publication date May 1981).

BIF (Brainstorming-in-Football Stadiums)

There is a real need for social institutions to be seen as multi-purpose rather than single purpose. We note this with schools where in Victoria increasingly school libraries are being made public libraries rather than purely school libraries. I would see a real need for the same perspective to occur with football stadiums and other large " meeting places". Football stadiums could be used as learning venues rather than purely as sporting venues. The stadium would be divided up into different sections according to topics discussed. Ideas generated could be flashed on to a scoreboard. Resource people would be placed in each section of the football stadium. I would see this technique as being particularly appropriate for massive learning exercises. In August 1980 tens of thousands of dollars were spent on a conference on the future of Australia which brought together 120 of the future decision leaders of Australia. For a few thousand dollars tens of thousands of people could be involved in a big exercise on the future of Australia in a football stadium. They would come to the stadium on perhaps a Saturday and Sunday to discuss specific aspects of the future of Australia. The results of their discussions could be incorporated in media releases. In this way hundreds of thousands of people could be made aware of the sorts of issues being considered. This is basically a non-elitist technique which could be used inexpensively by community groups in evaluating potential futures. It could also be used by educational institutions in involving students in considering possible, probably and perferable futures for educational institutions.

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